

WHAT IS CLAIMED IS:

1. A composition comprising a geminally disubstituted olefin-carbon monoxide-ethylene polymer.

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2. The composition of claim 1 wherein said polymer comprises a polymer having a number average molecular weight of from about 200 to about 150,000.

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3. The composition of claim 1 wherein said geminally disubstituted olefin comprises isobutylene.

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4. The composition of claim 1 wherein said polymer comprises 1-40 mole % of said geminally disubstituted olefin, 3-40 mole % of said carbon monoxide, and 5-80 mole % of said ethylene.

5. The composition of claim 1 wherein said polymer further comprises a monomer X, wherein said monomer X comprises a free radical polymerizable monomer or mixtures of monomers.

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6. The composition of claim 5 wherein said monomer X is selected from the group consisting of C₃ to C₃₀ alpha-olefins, C₃ to C₃₀ internal olefins, styrene, styrene derivatives, unsaturated mono- and dicarboxylic acids of 3-20 carbon atoms, esters of such unsaturated mono- and dicarboxylic acids, vinyl esters of saturated carboxylic acids wherein the acid group has 1-18 carbon atoms, vinyl alkyl ethers wherein the alkyl group has 1-18 carbon atoms, halogenated ethylene derivatives, methyl vinyl ketone, 1-vinylpyrrolidone, acrylonitrile, acrylamide, acrolein, allyl alcohol, allyl chloride, allyl acetate, and mixtures.

7. The composition of claim 5 wherein said mixtures of monomer X are selected from one of raffinate I and raffinate II.

5 8. A polymerization method comprising reacting a geminally disubstituted olefin feed, a carbon monoxide feed and an ethylene feed under free radical polymerization conditions to form a geminally disubstituted olefin-carbon monoxide-ethylene polymer.

10 9. The method of claim 8 wherein the polymerization conditions range in temperature from about 50°C to about 300°C and range in pressure from about 500 psig to about 30,000 psig.

15 10. The method of claim 8 wherein the polymerization is conducted in the presence of a solvent.

11. The method of claim 8 wherein the polymerization is conducted in the presence of a free radical initiator.

20 12. The method of claim 11 wherein said free radical initiator is selected from one of organic peroxides and azo compounds.

25 13. The method of claim 8 wherein said polymer comprises a polymer having a number average molecular weight of from about 200 to about 150,000.

14. The method of claim 8 wherein said geminally disubstituted olefin comprises isobutylene.

15. The method of claim 8 wherein said polymer comprises 1-40 mole % of said geminally disubstituted olefin, 3-40 mole % of said carbon monoxide, and 5-80 mole % of said ethylene.

5 16. The polymerization method of claim 8 further comprising reacting a feed containing monomer X with said geminally disubstituted olefin feed, said carbon monoxide feed and said ethylene feed under free radical polymerization conditions to form a geminally disubstituted olefin-carbon monoxide-ethylene-X polymer, wherein said monomer X comprises a free radical polymerizable monomer or mixtures of monomers.

10 17. The method of claim 16 wherein said monomer X is selected from the group consisting of C₃ to C₃₀ alpha-olefins, C₃ to C₃₀ internal olefins, styrene, styrene derivatives, unsaturated mono- and dicarboxylic acids of 3-20 carbon atoms, esters of such unsaturated mono- and dicarboxylic acids, vinyl esters of saturated carboxylic acids wherein the acid group has 1-18 carbon atoms, vinyl alkyl ethers wherein the alkyl group has 1-18 carbon atoms, halogenated ethylene derivatives, methyl vinyl ketone, 1-vinylpyrrolidone, acrylonitrile, acrylamide, acrolein, allyl alcohol, allyl chloride, allyl acetate, and mixtures thereof.

15 18. The method of claim 16 wherein said mixtures of monomer X are selected from one of raffinate I and raffinate II.

20 19. A PVC resin composition comprising polyvinyl chloride and a plasticizer selected from the group consisting of: i) a geminally disubstituted olefin-carbon monoxide-ethylene polymer; ii) a geminally disubstituted olefin-carbon monoxide-ethylene-X polymer; and iii) mixtures thereof, wherein said monomer X comprises a free radical polymerizable monomer.

20. A method for preparing a PVC resin comprising blending polyvinyl chloride with a plasticizer selected from the group consisting of: i) a geminally disubstituted olefin-carbon monoxide-ethylene polymer; ii) a geminally disubstituted olefin-carbon monoxide-ethylene-X polymer; and iii) mixtures thereof, wherein said monomer X comprises a free radical polymerizable monomer.